# WATER RESOURCES COMMISSION DECISION

**Town of Mansfield**
**Morrison Well #10**
**Interbasin Transfer Application**

**June 8, 2000**

## I. DECISION

After review of the facts provided by the applicant, analysis of the associated data, and consideration of public and agency comments concerning this proposal, **the Water Resources Commission approved, with conditions, the town of Mansfield's request for an Interbasin Transfer for its proposed Morrison Well.** Final compliance with the performance standards must be achieved by August 31, 2001, unless otherwise stated.

## II. BACKGROUND

On October 4, 1999, the Massachusetts Water Resources Commission (WRC) received a request for approval of an action to increase the present rate of interbasin transfer under the Interbasin Transfer Act (M.G. L. Chapter 21 §§ 8B-8D) from the Town of Mansfield. Mansfield is proposing to develop a new gravel-packed well in a sand and gravel aquifer near the Witch Pond Swamp in the Bungay Brook subbasin of the Ten Mile River basin (**Figure 1**).

On January 13, 2000, after receiving additional information, the WRC voted to accept the application as complete. Two public hearings to take comment on the application were held in February 2000, in Attleboro, for the donor basin, and Mansfield, the receiving community. A third public hearing to take comments on the WRC staff recommendation was held on March 20, 2000 in Mansfield. Responses to comments received through the public hearing process are available in a separate report from the Water Resources Commission.

The WRC discussed the merits of the application at its March 9, 2000 meeting. Comments and concerns raised by the staff recommendation were discussed at the April 13, 2000 meeting. **On June 8, 2000, the Water Resources Commission, in a ten to two (10-2) vote, approved, with conditions, the town of Mansfield's request for an Interbasin Transfer for its proposed Morrison Well with conditions.**

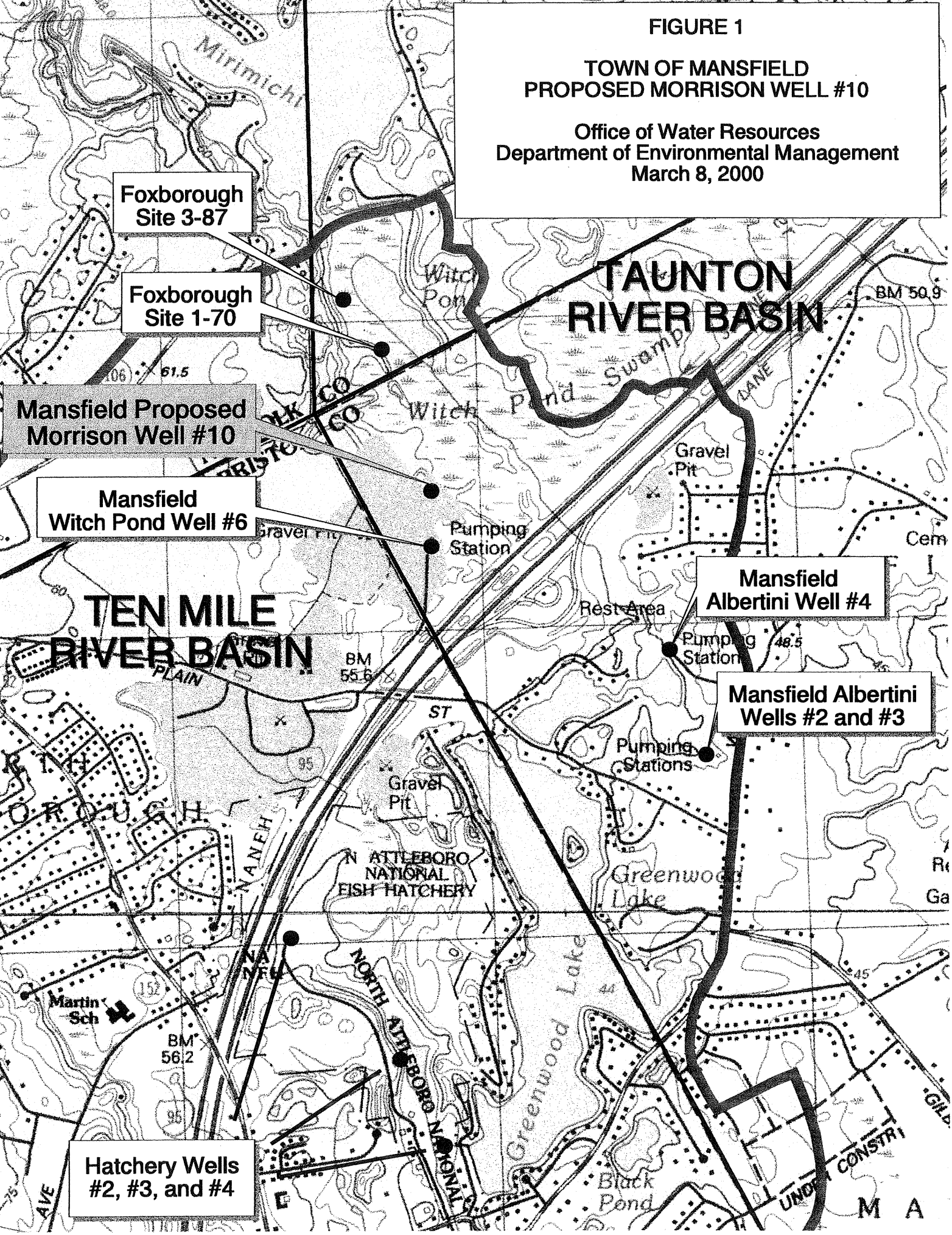
FIGURE 1
TOWN OF MANSFIELD
PROPOSED MORRISON WELL #10
Office of Water Resources
Department of Environmental Management
March 8, 2000
Foxborough Site 3-87
Foxborough Site 1-70
Mansfield Proposed Morrison Well #10
Mansfield Witch Pond Well #6
Mansfield Albertini Well #4
Mansfield Albertini Wells #2 and #3
Hatchery Wells #2, #3, and #4
TAUNTON RIVER BASIN
TEN MILE RIVER BASIN
Witch Pond
Swamp
Gravel Pit
Pumping Station
Rest Area
Pumping Stations
N ATTLEBORO NATIONAL FISH HATCHERY
Greenwood Lake
Black Pond
BM 55.6
BM 56.2
BM 50.9
Martin Sch
NORTH ATTLEBORO NATIONAL
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## III. FACTS PERTAINING TO THE APPLICATION

1. The Secretary of Environmental Affairs issued a certificate on the Environmental Notification Form filed for this project on March 13, 1998, stating that an Environmental Impact Report was not required.
2. Mansfield has land area in both the Ten Mile River basin and Taunton River basin. The Town is applying for permission to transfer water from the Morrison Well, to be developed within town, in the Ten Mile River basin.
3. The well has a proposed capacity of 0.99 million gallons per day (mgd).
4. Water from this well will be used within the town of Mansfield and discharged as wastewater to the Mansfield regional wastewater treatment plant in the town of Norton, in the Taunton River basin.
5. The Interbasin Transfer Act is triggered because water from this source crosses a basin line and a town line.
6. Mansfield currently has nine water supply sources, Albertini Wells #2, #3 and #4, and Well #6 in the Ten Mile River basin and Cates Springs #1, Dustin #7, and Prescott #8 and #9 in the Taunton River basin. The town's Walsh Wellfield, in the Taunton River basin, went on line on line in June 1999.

## IV. BASIS FOR WRC DECISION

This interbasin transfer application was reviewed on its own merits. This decision is made on facts relevant to the Interbasin Transfer Act and its regulations. The application and associated data underwent careful review and analysis. It was reviewed by DEM's Office of Water Resources, DEP's Office of Watershed Management and Southeast Regional Office, DFWELE's Division of Fisheries and Wildlife, Division of Marine Fisheries, Natural Heritage and Endangered Species Program and Riverways Program, and the EOEA Ten Mile River Basin Team.

This decision has been made after an extensive evaluation of the project and of Mansfield's compliance with the seven applicable criteria of the Interbasin Transfer Act regulations, as well as the Interbasin Transfer Act Performance Standards adopted by the WRC in August 1999. Consideration has been given to the public and agency comments received concerning this proposal. Mansfield and its consultants worked closely with the WRC to provide all the required information. In addition, experts on Atlantic white cedar swamp ecology were consulted.

The major issues raised with this project concern water conservation, impacts to the adjacent Atlantic White Cedar swamp, which serves as habitat for two endangered species (Hessel's Hairstreak butterfly and the spotted turtle), the water balance of the ground water model used to assess environmental impacts, and development of a Local Water Resources Management Plan. Attachment 1 provides a synopsis of how the application addressed the criteria of the regulations and the associated Performance Standards. The following discussion summarizes the analyses of specific environmental

impacts, as required under the Act, and provides the basis for setting conditions on the approval of the application.

**Synopsis Of The Evaluation Criteria (313 CMR 4.05)**

| Criteria | Application Meets? |
|---|---|
| **Criterion #1:** MEPA Compliance | Yes |
| **Criterion #2:** Viable In-Basin Sources | Yes |
| **Criterion #3:** Water Conservation | Yes, Conditionally |
| **Criterion #4:** Watershed Management | Not Applicable |
| **Criterion #5:** Reasonable Instream Flow | Yes, with Monitoring |
| **Criterion #6:** Groundwater/Pumping Test | Yes |
| **Criterion #7:** Local Water Resources Management Plan | Yes, Conditionally |
| **Criterion #8:** Cumulative Impacts | Yes, with Monitoring |

## VIABLE IN-BASIN SOURCES

Although the Interbasin Transfer Act is triggered because the water from this proposed well will be discharged as wastewater across a town line, this is an interbasin transfer of water supply because the water supply crosses a basin line for use in the receiving basin. Because Mansfield discharges some of its water supply outside town, this transfer is not exempt under the intratown exemption.

Because this is a water supply transfer, Mansfield was required to make all reasonable efforts to identify and develop all viable sources in the Taunton River basin section of town, which is the "receiving area". Mansfield has land area in four subbasins of the Taunton River basin, as delineated in the 1991 WRC-approved Taunton River Basin Plan: Wading River at Mansfield, Wading River at Norton, Rumford River at Norton, and the Canoe River. The 1991 Basin Plan and 1997 Update identified the Wading River at Mansfield subbasin and the Canoe River subbasin as having no potential available yield for increased water supply development. Mansfield has four existing wells in the Canoe River subbasin: Cates Springs #1, Dustin #7, and Prescott #8 and #9. The town's Walsh Wellfield in the Wading River at Norton subbasin went on line in June 1999. This well has a capacity of 1.5 mgd. Although the Basin Plan identified potential available yield in the Rumford River at Norton subbasin, the presence of a federal Superfund site makes developing a public water supply well within this subbasin highly uncertain.

## WATER CONSERVATION

Mansfield's conservation program meets most, but not all of the 1992 Water Conservation Standards for the Commonwealth of Massachusetts and 1999 Interbasin Transfer Performance Standards. Mansfield's water conservation achievements are outlined in Attachment 1. When the Performance Standards were being reviewed for

approval, the WRC acknowledged that substantial lead time may be needed for a proponent to meet some of the standards. Therefore the WRC defined a two-year transition period for a proponent to demonstrate compliance. This application was received within this time period. Because Mansfield's water conservation program is comprehensive in other respects and Mansfield has committed to meeting the standards, the WRC believes that this decision can be conditioned to require that Mansfield comply with the 1999 Performance Standards.

In addition, at the public hearing on the March 9, 2000 Staff Recommendation, Emily Brunkhurst, Manager of the Audubon Society's Oak Knoll Wildlife Sanctuary offered to assist the town in developing water conservation programs. **The WRC urges the town to accept this offer and to work with Audubon and any other interested groups in developing water conservation programs.**

## REASONABLE INSTREAM FLOW

The Interbasin Transfer Act regulations require that the WRC shall consider that "reasonable instream flow in the river from which the water is transferred is maintained" (313 CMR 4.05(5)). The WRC considers that this project will maintain reasonable instream flow as defined for this project. The reasons for this are summarized in the following sections. The analyses which support this decision were discussed in great detail during the WRC's deliberations on this proposal and are documented in the Staff Recommendations of March 9, 2000 and June 8, 2000.

### Description of the Proposed Withdrawal

The Town of Mansfield is proposing to construct the Morrison Well (also known as Well #10) near its existing Well #6 in the headwaters of the Bungay Brook subbasin of the Ten Mile River basin. The drainage area of the well site is 0.363 square miles. The Morrison Well has a proposed safe yield of 0.99 mgd. Mansfield plans to use the water from this well throughout the year to supplement the town's existing municipal supply, but particularly to meet peak demands during summer months (June, July, and August). Addition of the proposed well would also allow regular maintenance to be performed on other existing wells within the subbasin.

Mansfield currently operates a gravel-packed well (Well #6) approximately 675 feet south of the proposed Morrison Well #10. Well #6 has operated for at least 20 years. During 1998 and 1999, Well #6 reportedly operated at an average rate of 0.48 to 0.49 mgd. In addition to Well #6, Mansfield has three other wells in this subbasin (Albertini Wells #2, #3, and #4). The Town of Mansfield's Water Management Act permit allows for withdrawals of 0.69 mgd from the combination of its existing Wells #2, #3, #4, and #6.

The Town of Foxborough intends to develop two water supply wells at test well locations 3-87 and 1-70 approximately 2,000 feet northwest and upstream of the proposed Mansfield Morrison Well site, also within the Bungay Brook subbasin headwaters. These wells are also subject to the Interbasin Transfer Act. The combined capacity of the Foxborough wells is proposed to be 1.2 mgd. Both towns worked together to develop a

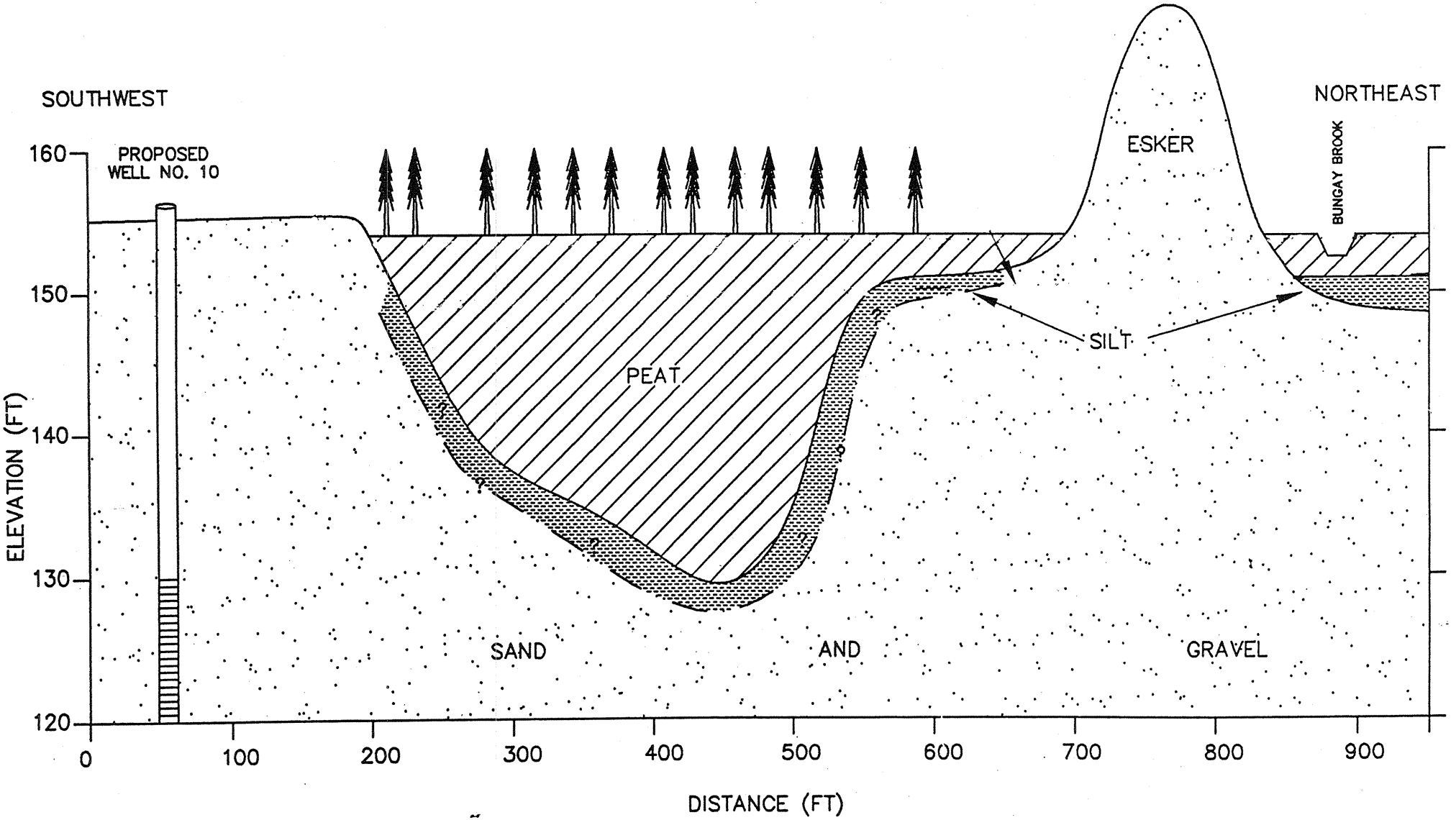
consistent characterization of the area hydrogeology. The cumulative effects of both well fields were evaluated in the Mansfield IBT application, with a focus on the impacts in closest proximity to the Mansfield wells. Refer to Figure 1 for the Bungay Brook subbasin with the location of Mansfield's existing and proposed wells and Foxborough's proposed wells.

**Description of the Site**

Mansfield's proposed Morrison Well is located in an abandoned gravel pit southwest of the Witch Pond Swamp (Figure 1). Bungay Brook flows from Witch Pond approximately 1,200 feet to the north of the well site, southeastward through the Witch Pond Swamp. The surficial basin divide between the Ten Mile River and Taunton River basins does not function as a ground water divide, as there is indication that ground water flow from Lake Mirimichi in the Taunton River basin provides recharge to Witch Pond (in the Ten Mile River basin) and thereby contributes flow to Bungay Brook.

The edge of the gravel formation abuts the Witch Pond Swamp wetlands at a distance of approximately 250 feet from the proposed Morrison Well. At its nearest point, the Bungay Brook channel is located at a distance of approximately 850 feet from the proposed well. Data contained in the pumping test report for Well #10 (Woodard & Curran, 1998) and in the interbasin transfer application for the Morrison Well (1999 and 2000), indicates that Witch Pond Swamp is perched on a peat layer of variable thickness (observed to be up to 26 feet thick in the wetland area east of the proposed well). The base of the peat layer has been observed to be increasingly compact with depth. The peat layer is underlain by a low-permeability silt layer observed at several locations. The area wells are screened in and draw water from a thick sand and gravel formation that surrounds and underlies the swamp. The Morrison Well will be screened at depths of 30 to 40 feet below ground level in the sand and gravel formation. A schematic geological cross section of the proposed well site is depicted in **Figure 2**. An Atlantic white cedar swamp exists within the Witch Pond Swamp wetlands between distances of approximately 300 and 700 feet from the proposed Morrison Well. This swamp serves as a unique habitat for two endangered species: the spotted turtle and Hessel's Hairstreak butterfly. The applicant inspected this area and found that the Atlantic white cedar swamp is in good health and has not suffered detrimental invasion of competing deciduous species (e.g., red maple).

Studies regarding the tolerance of the Atlantic white cedar swamp ecosystem to water level fluctuations (specifically impacts of ground water withdrawals) were not available for use in the review of this application. However, agency personnel and individuals with expertise in Atlantic white cedar in Massachusetts were consulted to ascertain the hydrologic conditions necessary to maintain the Atlantic white cedar swamp ecosystem values and functions. While specific conditions were not identified in these consultations, attributes and characteristics of the ecosystem were identified. To maintain its habitat and to prevent invasion and dominance by other plant species, Atlantic white cedars require periodic inundation and a near-surface water table.




PROPOSED MORRISON WELL NO.10 INTERBASIN TRANSFER ACT PERMIT APPLICATION

CROSS SECTION THROUGH TRAVERSE LINE 1
WHITE CEDAR SWAMP – EXISTING CONDITIONS

**FIGURE 2**

OFFICE OF WATER RESOURCES
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
(Modified from Woodward & Curran Figure L-10)

**Streamflow Analysis**

In order to assist the Commission in its reasonable instream flow determination, the applicant was required to characterize the hydrology of the area and the impacts of this proposal on that resource. The results of their investigations are summarized below:

- The Witch Pond Swamp and Bungay Brook operate more as a pond than as a typical swamp and stream system.
- The basin receives recharge from Lake Mirimichi in the Taunton River basin; the stream has a very low slope; and flow is controlled by a bedrock formation that rises to the ground surface and essentially constrains surface water.
- During some portions of the year, ground water from the sand and gravel aquifer does not serve as a source of recharge to Bungay Brook in this area. Rather, it appears that in the vicinity of the proposed Morrison Well site, Bungay Brook is sustained primarly by precipitation and drainage from Witch Pond.

Because of these conditions, it appears that Bungay Brook near the Morrison Well will not be significantly impacted by the proposed withdrawal. Unlike most other New England streams, the brook is not significantly dependent on recharge from ground water near the well site during the summer months.

**Streamflow Dependent Ecosystems Analyses**

In addition to maintenance of a reasonable instream flow, the regulations (313 CMR 4.05(5)) require the Commission to consider other streamflow dependent ecosystems and water uses when evaluating the impacts of a proposed Interbasin Transfer. Among these uses are: the effect on ground water and surface water elevations, the significance of wetlands and dependent flora and fauna and effects of the withdrawal thereon, the effect on other water withdrawals and undeveloped rights within the donor basin, and effect on other instream uses.[1]

The applicant presented data from the 1998 pumping test performed at Mansfield's proposed Morrison Well site, as well as water levels measured in observation wells within the various geologic layers and streamflow measurements made in the vicinity of the proposed Morrison Well site during the spring and summer of 1999 and during April and May 2000. The applicant also developed a groundwater model (MODFLOW) to simulate drawdowns in the sand and gravel aquifer. The model was adjusted, after additional field data collection, in response to public comment to more accurately simulate the hydrology and aquifer response to the pumping wells. The following points summarize the results of the field observations (empirical data) as well as the results of the ground water flow model.

- Under average recharge conditions, drawdown in the sand and gravel aquifer beneath the Atlantic white cedar swamp and Bungay Brook from Well #10 is expected to be on the order of 2.5 to 3.5 feet (corresponding to aquifer water table elevations of

[1] The complete list of the uses to be considered is found in the Interbasin Transfer Act regulations, 313 CMR 4.05(5).

approximately 151.5 to 150.5 feet MSL). Predicted drawdown in the sand and gravel aquifer is greatest (approximately six feet) in the immediate vicinity of the Morrison Well and diminishes logarithmically with distance from the pumping well. Therefore, under normal recharge conditions, it appears that the Morrison Well will have a limited hydraulic influence on the nearby wetlands and Bungay Brook.

- The silt and peat layers limit the hydraulic connection between surface water features and the lower sand and gravel aquifer near the proposed Morrison Well site.
- Pumping the proposed Morrison Well will not cause significant drawdown in the wetlands. Under average recharge conditions and well use of 2/3 maximum capacity (all wells pumping), cumulative draw downs of approximately 0.5 to 5.5 feet in the aquifer beneath the wetlands immediately adjacent to the Mansfield wells were predicted by the proponent's model. Under the most severe pumping and recharge scenarios simulated by the MODFLOW model, drawdown in the aquifer beneath the wetlands adjacent to the Mansfield wells would be 6 to 10 feet, resulting in water table elevations of approximately 144 to 148 feet MSL.
- The amount of drawdown beneath the wetland is mitigated by the Mansfield wells' distance from the wetland.
- Water balance data provided by the applicant for its final model indicated that under a drought condition, Well #10 will receive most of its water (approximately 70%) from groundwater storage in the aquifer, with a lesser amount (approximately 20%) coming from the aquifer to the north, representing contributions from ground water inflow to the Upper Bungay basin from Lake Mirimichi. A maximum of 10 percent of the water pumped by Well #10 was estimated from surface water sources under drought conditions.
- Impacts to the shallow water table within the peat layer of the Atlantic white cedar swamp system are expected to be minimal based on the hydraulic separation observed during the 1998 pumping test and during the 1999 and 2000 observation periods. The applicant noted that during field measurement events in August 1999, standing water was observed within four inches of hollows on the Atlantic white cedar swamp surface. This observation is significant because it verifies the adequacy of the hydraulic separation and precipitation events to maintain the necessary hydrologic conditions in the Atlantic white cedar swamp even during a dry summer and while Mansfield Well #6 (at a distance of approximately 625 feet from the swamp) was in use.
- Impacts of the proposed Morrison Well on the other uses do not appear to be significant. Interference with Mansfield's Well #6 is expected because of the wells' proximity, but Mansfield can manage the operation of the two wells to minimize interference effects. The impact of the Morrison Well on the proposed Foxborough wells is expected to be minimal.
- Seasonal inundation of the Atlantic white cedar swamp adjacent to the Morrison Well will continue to occur as a result of local precipitation, and field data suggest that the water table level in the peat will remain within one foot of the wetland surface under future pumping conditions.
- A monitoring program can be used to verify expected conditions at the Morrison well site and that invasive species are not increasing, and that species that represent sources of nectar to Hessel's Hairstreak butterfly remain intact. Threshold water

table levels can be used to control impacts of pumping on nearby surface water resources.

**Threshold Water Table Elevations**

Although drawdown in the Atlantic white cedar swamp is not expected as a result of operating the Morrison Well, the WRC is requiring threshold water table elevations to assure protection of the area's sensitive resources and to verify expectations concerning impacts. The threshold elevations will be used to control the operation of the Morrison Well. In the event that any one of the thresholds is exceeded (i.e., the water table elevation falls below the threshold), well use will be discontinued until the water table elevation is restored above the threshold. In addition, the monitoring plan required by this decision must be developed to include a program for reducing withdrawals from the Morrison Well when water levels approach these thresholds and allowing a recovery period after the thresholds are reached.

**An elevation of 153 feet NGVD (or an alternative elevation demonstrated by surveying to be within one foot of the base of wetland hollows) is required for *the peat layer.*** This level is intended to verify the elevations predicted by the applicant under normal operating conditions and to keep water near surface, as indicated by Atlantic White Cedar Swamp experts as being necessary to maintain the ecosystem. During periods of less than normal recharge, maintenance of this water table elevation will result in a depth to water no greater than that which occurred in August 1999 (without Well #10 pumping).

**A threshold level of 147 feet NGVD is required for *the aquifer* at the edge of the Atlantic white cedar swamp nearest to the Morrison Well.** This level is consistent with the elevation modeled by the applicant to include all wells operating at normal rates (2/3 pumping rate or full pumping rate for 16 hours per day). This threshold level should be readily maintained during normal precipitation conditions and normal well operation. It is expected that this threshold level may be exceeded after a 30-day period of no recharge, which may occur during late summer months (August, September). In these cases, the well will be shut off. Maintenance of the aquifer water level at this elevation will limit the hydraulic influence of pumping from the sand and gravel aquifer on the Atlantic white cedar wetland.

**A threshold level of 150 feet NGVD is required for *the aquifer at the location of observation well 9-97 adjacent to Bungay Brook.*** This elevation protects the Brook from induced infiltration caused by pumping from the sand and gravel aquifer and is no worse than the conditions projected to have occurred during the summer of 1999 (without Morrison Well in operation).

The water table threshold levels specified above are recommended for use by DEP as compliance levels in association with the Water Management Act permit for the Morrison Well. It is not expected that well operation will have to be modified frequently to meet the threshold levels; rather, the levels were selected to represent acceptable hydraulic

conditions that maintain the wetland and surface water values of Witch Pond Swamp, the Atlantic white cedar swamp, and Bungay Brook and are consistent with the applicant's projected configuration of the water table levels associated with use of all of the public water supply wells in the site area. It is expected that seasonal inundation in the wetlands will continue with the use of the Morrison Well and that the water levels in the wetlands will undergo the normal range of seasonal variation. During the first five years of well operation, the threshold levels and the period and levels of seasonal inundation will be monitored to verify the expected hydrologic responses to pumping in the various geologic layers. Following review of data collected during the first five years of well operation, adjustment of the threshold levels and/or the well usage may be appropriate.

**Other Issues**

Public comments on the application, in particular those from the Audubon Society (Oak Knoll Wildlife Sanctuary) and Ten Mile River Watershed Alliance, expressed concern about the impacts of this project on the ongoing preservation efforts along the Bungay River. Audubon has been working with the City of Attleboro and its residents and environmental groups to preserve the habitat along the Bungay River. While the WRC believes the Morrison Well will not have a negative impact to these efforts, **we urge the town of Mansfield to participate in these efforts to expand these protection efforts to the upper Bungay Brook and the unique habitat of the Witch Pond Swamp.**

**LOCAL WATER RESOURCES MANAGEMENT PLAN**

Because Mansfield's Interbasin Transfer application was received after adoption of the Performance Standards, it is subject to the new definition of a Local Water Resources Management Plan. The Town does not have a consolidated plan, as outlined in the Performance Standards, however, it has completed many of the various components. The Town is in the process of completing a "Water System Management Action Plan". In the response to Staff's request for additional information, dated December 7, 1999, Mansfield stated that it will develop a consolidated Local Water Resources Management Plan in accordance with the Performance Standards. The Interbasin Transfer regulations, 313 CMR 4.05(7) state that a community requesting approval for an Interbasin Transfer must "have adopted or (be) actively engaged in developing a local water resources management plan." Mansfield has committed to comply with Criterion 7 of the regulations.

## V. CONDITIONS OF THE STAFF RECOMMENDATION

Based on the analyses and concerns expressed about this proposal, the WRC approval of Mansfield's Morrison Well Interbasin Transfer application is subject to the following conditions. **These conditions must be met before the Morrison Well is installed.** In addition, Mansfield must agree to abide by all other permits issued for this well.

***In order to fully comply with Criterion #3, that all practical measures to conserve water have been taken in the receiving area:***

1. The report for the leak detection survey to be completed this year (2000), together with documentation of the leaks found and repaired, must be provided to the WRC.
2. Mansfield must continue to perform leak detection surveys every two years. Records of leaks found *and repaired* must be maintained and made available to WRC staff upon request for two years after completion of each survey. Regular reporting on the leak detection surveys should be carried out in accordance with the Water Management Act permit. Future leak detection surveys and repairs should be carried out in a manner similar to the MWRA's leak detection regulations (360 CMR 12.00).
3. Mansfield must provide documentation that the 35 unmetered residential services have been metered.
4. Mansfield must retrofit the North Main Street Fire Station, the dog pound, and highway garage with low flow devices. Documentation that this has been completed must be provided to the WRC.
5. The town must conduct a water audit of its water supply system, including public facilities, and furnish the water audit report to the WRC. Mansfield must commit to conducting a water audit of its system every 3-5 years.
6. Mansfield must implement a comprehensive residential conservation program as long as residential gpcd is above 65. The program should include a retrofit, rebate or other similarly effective program for encouraging installation of household water saving devices, including faucet aerators, showerheads and toilets; and through efforts to reduce excessive outdoor water use. A plan for this program shall be provided to the WRC. Mansfield must submit a copy of its Public Water Supply Annual Statistical Report (required by DEP) to the WRC annually, for the first five years after the Morrison Well is operational, to demonstrate the continued effectiveness of the program.
7. Mansfield must implement a program to aggressively promote conservation by its industrial, commercial and institutional water users. This program should include regular contact with these users to promote water conservation. A plan for this program shall be provided to the WRC for approval.
8. Mansfield must provide documentation that it has completed the meter downsizing program, scheduled to be completed December 31, 2000.

***In order to fully comply with Criterion #5, that reasonable instream flow in the river from which the water is transferred is maintained (environmental impacts):***

1. Mansfield must develop a monitoring plan to assure that withdrawals from the Morrison Well will not adversely impact the habitat of the Hessel's Hairstreak butterfly, the spotted turtle, and the Atlantic white cedar swamp. The monitoring plan must be approved by the appropriate state agencies and the WRC before the well is installed. Results of monitoring must be reported to NHESP and DEP, at an interval to be decided by these agencies, for their review and assessment. Following review of the baseline period report, Mansfield may propose revisions

(subject to agency review and approval), or the WRC and DEP may require revisions to the operating period monitoring plan, the well operating schedule, or the threshold water table elevations. Mansfield shall perform operational monitoring for as long as the Morrison Well is used as a public water supply source.

2. This monitoring plan must be submitted to the Natural Heritage and Endangered Species Program (NHESP), DEP and WRC staff. Elements of the plan must include the following items, at a minimum. Specific details, additional monitoring parameters, observation locations, and monitoring schedule must be established by a wetlands expert on behalf of the Town, in conjunction with discussions with the appropriate agencies and WRC staff.
   - Continuous water level monitoring in the swamp and in the underlying aquifer during a baseline period prior to well operation and during operation of the Morrison Well to verify the hydrologic conditions modeled by Woodard & Curran and to verify that the water table in the Atlantic white cedar swamp is not drawn down for increased frequency and duration beyond the amount occurring in areas unaffected by the well.
   - Vegetation monitoring to assure that invasive species are not increasing in proportion near the Morrison Well and that species which represent nectar sources to the Hessel's Hairstreak are not affected by pumping.
   - A report shall be prepared at the conclusion of the baseline monitoring period and prior to initiating the use of the Morrison Well and submitted to NHESP, DEP and WRC staff.
3. Mansfield shall provide access and allow agency personnel (or delegated parties) to inspect the well site to verify conditions of this approval.
4. As part of the monitoring program, Mansfield must assure that water table elevation in the shallow peat in the Atlantic white cedar swamp nearest the Morrison Well shall be maintained above a level of 153.0 feet NGVD or a level determined by surveying to be within one foot of the surface of the swamp. The water level in the underlying aquifer adjacent to the Atlantic white cedar swamp (nearest to the Morrison Well) must be maintained above 147.0 feet NGVD. The water level in the aquifer near Bungay Brook (nearest to the Morrison Well) must be maintained above or at an elevation of 150.0 feet NGVD. The monitoring plan should include a program for reducing withdrawals from the Morrison Well when water levels approach these thresholds and shutting off when these levels are reached. The monitoring plan should also specify a recovery period during which the Morrison well will not be pumped after a threshold is reached. Alternative compliance levels may be proposed by the applicant or the WRC following the first five years of well operation if it can be demonstrated that alternative levels are protective of the sensitive resources in the Morrison Well area.
5. Annual reports of water table elevations and pumpage shall be furnished to the WRC and NHESP for review. If NHESP finds alteration of the habitat or evidence of increasing invasive species in the Atlantic white cedar swamp, or if the WRC finds negative hydrologic impacts are occurring to surface water or ground water resources, pumpage of the Morrison Well may be restricted

accordingly by the DEP via the Town's Water Management Act permit for the Morrison Well in consultation with the WRC.

6. Mansfield must commit to abide by any restrictions (including, but not limited to withdrawal rates or operational schedule) that may be placed on the use of the Morrison Well as a result of monitoring.

***In order to fully comply with Criterion #7, that the community has adopted or is actively engaged in developing a local water resources management plan:***

1. Mansfield must submit a timeline for completion and scope of the local water resources management plan it is planning to develop for WRC review and comment. The timeline should include the dates that the draft and final reports will be submitted to the WRC for review, comment and approval.
2. The plan must conform with the local water resources management plan outline found in Appendix B of the Interbasin Transfer Act Performance Standards, approved by the WRC in August 1999, include strategies to reduce peak demand and incorporate the Water System Management Action Plan the town is in the process of developing. In addition, to address concerns raised by the Bungay Associates, Inc., an organization of homeowners located on Bungay (Greenwood) Lake, the local water resources management plan should take a comprehensive approach to management of all Mansfield's wells located in the Ten Mile River basin, in order to minimize impacts to the flowage rights claimed by the home owners. Mansfield should work with the North Attleborough National Salmon Hatchery and the Bungay Associates, Inc. to address these concerns.
3. Mansfield must submit the final draft of the local water resources management plan to the WRC for approval.

***In order to fully comply with Criterion #8, the Commission shall consider the impacts of all past, authorized or proposed transfers in the donor basin:***

1. Mansfield must commit to abiding by any restrictions that may be placed on the use of the Morrison Well as a result of monitoring.

**Executive Order 385**

This decision is consistent with Executive Order 385, which has the dual objective of resource protection and sustainable development. The decision does not encourage growth without adequate infrastructure, nor does it cause an unavoidable loss of environmental quality or resources.

## ATTACHMENT 1

## INTERBASIN TRANSFER ACT
## CRITERIA FOR EVALUATING AN APPLICATION
## SYNOPSIS
## HOW THE APPLICATION ADDRESSES THE CRITERIA
## AND THE ASSOCIATED PERFORMANCE STANDARDS

**CRITERION #1:** An environmental review pursuant to MGL, c. 30, §§ 61 and 62H, inclusive has been complied with for the proposed IBT.

- *On March 13, 1998, the Secretary of Environmental Affairs issued a certificate on the ENF filed for this project, stating that an environmental impact report was not required for this project.*

**CRITERION #2:** All reasonable efforts have been made to identify and develop all viable sources in the receiving area.

The WRC performance standard for a water supply source directs a proponent to discuss the water supply alternatives considered, but rejected. Reason for the rejection of these alternatives should be clearly stated. This information should be included as part of the Local Water Resources Management Plan required under Criterion #7. In addition, as stated in the regulations, a local source must not cause unacceptable environmental damage.

- *The Town is completing construction of a 1.5 mgd wellfield in the Wading River subbasin of the Taunton River basin. Other subbasins in the Taunton River basin portion of Mansfield are limited by available yield or poor water quality.*

**CRITERION #3:** All practical measures to conserve water have been taken in the receiving area...

For a water supply transfer, the WRC performance standards require:

1) A full leak detection survey should have been completed within the previous two years of the application. The proponent should provide documentation regarding repair of leaks identified during the survey. Leak detection surveys should be carried out in accordance with the MWRA's leak detection regulations (360 CMR 12.00).

- *The last leak detection survey was concluded in July 1998. The next survey is scheduled to be completed by the end of 2000. Survey methodology is similar to that required by the MWRA.*
- *Leaks totaling an estimated 44,784 gpd were found and repaired as part of normal maintenance. Documentation of this work is not available.*

2) The water supply system should be 100% metered, including public facilities served by the proponent. A program of meter repair and/or replacement must be in place. Documentation of annual calibration of master meters and a description of the calibration program should be included in the application.

- *All but 35 residential services are metered. These services are scheduled to be metered by June 30, 2000. The town appropriated money to complete this work in July 1999. Documentation has been provided to WRC staff.*
- *Residential meters are replaced every 10 years, or as needed. Large user meters are tested and calibrated every two years. Master meters are calibrated annually. Documentation of master meter calibration has been provided to WRC staff.*

3) Unaccounted-for water should be 10% or less. The proponent should provide documentation of unaccounted-for water, in both gallons and percentage of the total water pumped and withdrawn, for each of the past five years. The definition of accounted-for and unaccounted-for water for use in Interbasin Transfer applications is given in Appendix C of the Performance Standards. The plan by which the community intends to maintain or reduce this level should be included in the water resources management plan required under Criterion #7.

- *1998 unaccounted-for water was 5%; 7% in 1997; 6% in 1996; 15% in 1995; and 12% in 1994. The average for the last five years was 9%.*

4) The proponent should provide documentation to show that there are sufficient sources of funding to maintain the system, including covering the costs of operation, proper maintenance, proposed capital improvements, and water conservation. The rate structure must encourage water conservation.

- *Water rates include funding to maintain the system, including covering the costs of operation, proper maintenance, proposed capital improvements, water conservation devices, public education and leak detection and repair.*
- *The town has an increasing block rate structure.*
- *An enterprise account was established for the water system in July 1999.*

5) The proponent should bill its customers at least quarterly based on actual meter readings. Bills should be easily understandable to the customer (e.g. providing water use in gallons and including comparison of the previous year's use for same period).

- *Customers are billed quarterly. Meters are read quarterly.*

6) A drought/emergency contingency plan, as described in 313 CMR 4.02, should be in place. This plan should include seasonal use guidelines and measures for voluntary and mandatory water use restrictions and describe how these will be implemented. There should be a mechanism in place to tie water use restrictions to streamflow and/or surface water levels in the affected basin(s) where this information is available. The plan should be part of the Local Water Resources Management Plan required under Criterion #7.

- *The town has a two phase contingency plan consisting of odd/even watering restrictions. Phase I restricts outdoor watering to between the hours of 6 AM to 9 AM and 6 PM to 9 PM. Phase II restricts outdoor watering to between the hours of 6 AM to 8 AM only (except for vegetable gardens, which can be watered according to the Phase I schedule).*

7) All government and other public buildings under the control of the proponent, should have been retrofit with water saving devices.

- *Most of the town's public buildings have been retrofit with low-flow water fixtures.*
- *The Middle School and High School are currently being renovated and will be furnished with low-flow water fixtures.*
- *There are no plans to retrofit the North Main Street Fire Station, the dog pound, highway garage and a kindergarten (which is being abandoned). The town states that the amount of water used by these facilities is less than 1% of overall water consumption.*

8) Proponents should provide records of water audits conducted on public facilities. The most recent audit should have occurred within two years prior to the application for Interbasin Transfer approval.

- *The town has never conducted a water audit of its public facilities. The December 7, 1999 response to request for additional information states that municipal water use is 0.56% of total water usage, "a very small percent which probably cannot be significantly reduced."*

9) If the community's residential gallons per capita/day is greater than 65, the proponent should be implementing a comprehensive residential conservation program that seeks to reduce residential water use through a retrofit, rebate or other similarly effective program for encouraging installation of household water saving devices, including faucet aerators, showerheads and toilets and through efforts to reduce excessive outdoor water use.

- *Mansfield's residential gpcd was 78 in 1994 and 1995; 63 in 1996; 65 in 1997 and 74 in 1998. The five year average is 72. The town has provided low-flow shower heads and faucet aerators to customers upon request. It is planning on*

*continuing to offer these devices, as well as toilet tank inserts, at no cost. The town is planning on more widely publicizing the availability of these devices.*

10) A broad-based public education program, which attempts to reach every user at least two times per year, through such means as mailings, billboards, newspaper articles, cable television announcements or programs, or the use of other media, should be in place. Water suppliers should refer to the WRC's 1992 "Water Conservation Standards for the Commonwealth of Massachusetts" and the Massachusetts Water Works Association for recommended public education measures.

- *Mansfield's public education program includes bill stuffers, public service announcements on cable TV and in newspapers, school programs, billboards and information on lawn care.*
- *The public education program is ongoing. The Water Department holds an annual open house and participates in various Town events to promote water conservation.*

11) A program which identifies and ranks all commercial, industrial and institutional customers according to amount of use, and requires regular contact with the largest users to promote water conservation, should be in place. The water supplier should make regular contact with these users to promote water conservation. Materials on water reuse and recirculation techniques should be provided, where appropriate.

- *The Water Department identifies large water users through its billing program.*
- *The Town is instituting a program to downsize all meters. This program is scheduled to begin on July 1, 2000 and is expected to be completed by December 31, 2000.*
- *The Town provides information on meter resizing, water conservation and reuse and water conservation devices upon request.*

12) A program of land use controls to protect existing water supply sources of the receiving area that meet the requirements of the Department of Environmental Protection.

- *Mansfield has a zoning by-law, approved by DEP, which establishes a Surface and Ground Water Resources Protection District. Activities and uses in the areas governed by this District are regulated. This District includes the Zone II areas for each of the Town's water supply sites.*

13) As part of the local water resources management plan, there should be a long-term water conservation program, which complies with the 1992 Water Conservation Standards for the Commonwealth of Massachusetts, in place. This plan should reflect the goal of maintaining unaccounted-for at 10% or less of all water used, and of reducing future residential water use through a comprehensive residential water conservation program, if residential gpcd is greater than 65. The water conservation program should also have a goal of operating the system to balance water supply with other

environmental needs. If the transfer is approved, the proponent will need to submit a copy of its Public Water Supply Annual Statistical Report (required by DEP) to the Commission annually to demonstrate the continued effectiveness of the program.

- *Mansfield needs to develop a local water resources management plan which includes a long-term water conservation program*

**CRITERION #4:** A comprehensive forestry management program which balances water yields, wildlife habitat, and natural beauty on watershed lands presently serving the receiving area and under control of the proponent has been implemented.

Not applicable

**CRITERION #5:** Reasonable instream flow in the river from which the water is transferred is maintained.

- *Bungay Brook near the Morrison Well will not be impacted by the proposed withdrawal because instream flow is primarily maintained by precipitation events and ground water recharge from Lake Mirimichi in the Taunton River basin, which feeds Witch Pond and the brook. Unlike other New England streams, the brook is not dependent on recharge from ground water near the well site during the summer months.*
- *Potential impacts to streamflow-dependent ecosystems appear to be limited based upon extensive analysis of pumping test data (including effects of existing Well 6 and the proposed Foxboro wells) and observations made during the spring and summer of 1999. Monitoring and controlling withdrawals during dry periods will assure that negative impacts associated with the proposed withdrawal do not occur.*

**CRITERION #6:** The results of the pump test have been used to indicate the potential impacts of this project on other environmental resources and adjacent wells.

- *Pumping test results were used to evaluate the potential impacts of this project on other environmental resources and adjacent wells.*

**CRITERION #7:** Communities have adopted or are actively engaged in developing a local water resources management plan.

- *Mansfield has recently completed many of the components of a Local Water Resources Management Plan, including a town master Plan (1997) and other wastewater studies and plans and natural resources protection studies and plans. It is developing a Water System Management Action Plan. A draft of this plan is expected to be available at the end of March 2000. The Town expects to consolidate these studies and plans into a Local Water Resources Management Plan, as defined in the Performance Standards, as part of the Interbasin Transfer Process.*

**CRITERION #8:** The Commission shall consider the impacts of all past, authorized or proposed transfers in the donor basin.

*The use of the Morrison Well together with all past, authorized or proposed transfers in the donor basin will not have a significant adverse impact the resources of this area. Mansfield has committed to monitor use of this well and report potential impacts to DEP, NHESP and the WRC.*

**EO 385**

*This decision is consistent with Executive Order 385, which has the dual objective of resource protection and sustainable development.*